Why Lindner Optical Jig Borers

have changed so many ideas

about jig boring . . . . . .

How Lindner Optical Jig Borer

Picture an instrument where an off-balance condition of as little as *one millionth of an inch-ounce* can make it undependable! That's the uncannily accurate, low drift directional gyro made by Eclipse-Pioneer.

Now, imagine the ticklish problems in *manufacturing* such an instrument. Or wouldn't you rather?

Lindner Optical Jig Borers are helping solve these problems in a carefully screened area that employees have dubbed the "chlorophyll room". Why "chlorophyll"? Because the walls, machine tools, even the smocks are a soft green for maximum eye comfort. Here, electronic filters screen out even microscopic dust particles and the atmosphere is rigidly pegged at 70 degrees F., 45% humidity. Dimensional stability of parts is so critical they are "soaked" in this man-made atmosphere for at least 36 hours before being worked on.

In the "chlorophyll room", critical tolerances are the order of the day for the Lindner, *every* day. Parts calling for ±.0002 on centers and +.0002, —.0000 on bore diameters are handled as routine production.

The department foreman has this to say of the Lindner: "I consider it the best machine of its type. We especially like the extremely quiet and vibration-free operation, the fool-proof, optical measuring system and the infinitely variable speed control. The Lindner is so simple to operate, I believe a woman could easily handle it."

No wonder the Lindner has changed so many ideas about jig boring. And no wonder so many major toolrooms have made it such an important part of their precision operations. Companies like: General Electric, North American Aviation, Avco, General Mills, Lockheed, Vectron and many more.

All the eye-opening facts on the Lindner have been packed into a meaty and informative 25-minute movie film. Send for it today.

IN THE "CHLOROPHYLL ROOM" at Eclipse-Pioneer, a Lindner Optical Jig Borer (without Autopositioner) bores holes in the gimbal housing for "Polar Path" Directional Gyro.

Why Lindner optical jig borers have changed so many ideas about jig boring

1. **Optical measuring system does not depend on lead screws, gage blocks, bars or limit switches**—is permanently protected against mechanical wear. Only a light beam touches helically scribed cylindrical measuring scales which are independent of table movement mechanism and are **immovable** in axial direction.
2. **AUTOPOSITIONER® enables operator to preselect table position for next hole while one boring operation is in progress**—eliminates nonproductive time between holes. As one hole is completed, table moves in rapid traverse to the next preselected position. (Available only on model LB15A)
3. **Photo-electric optical centering device minimizes visual fatigue and errors in settings**—permits initial and repeat settings guaranteed accurate within .00015" and readings in .00005".
4. **Projection screen eliminates operator eye strain and bending**—helical line from measuring scale is projected on 2½" × ¾" screen which operator reads in standing position without eyepiece.
5. **Automatic table clamping prevents errors** in clamping and unclamping table between movements.

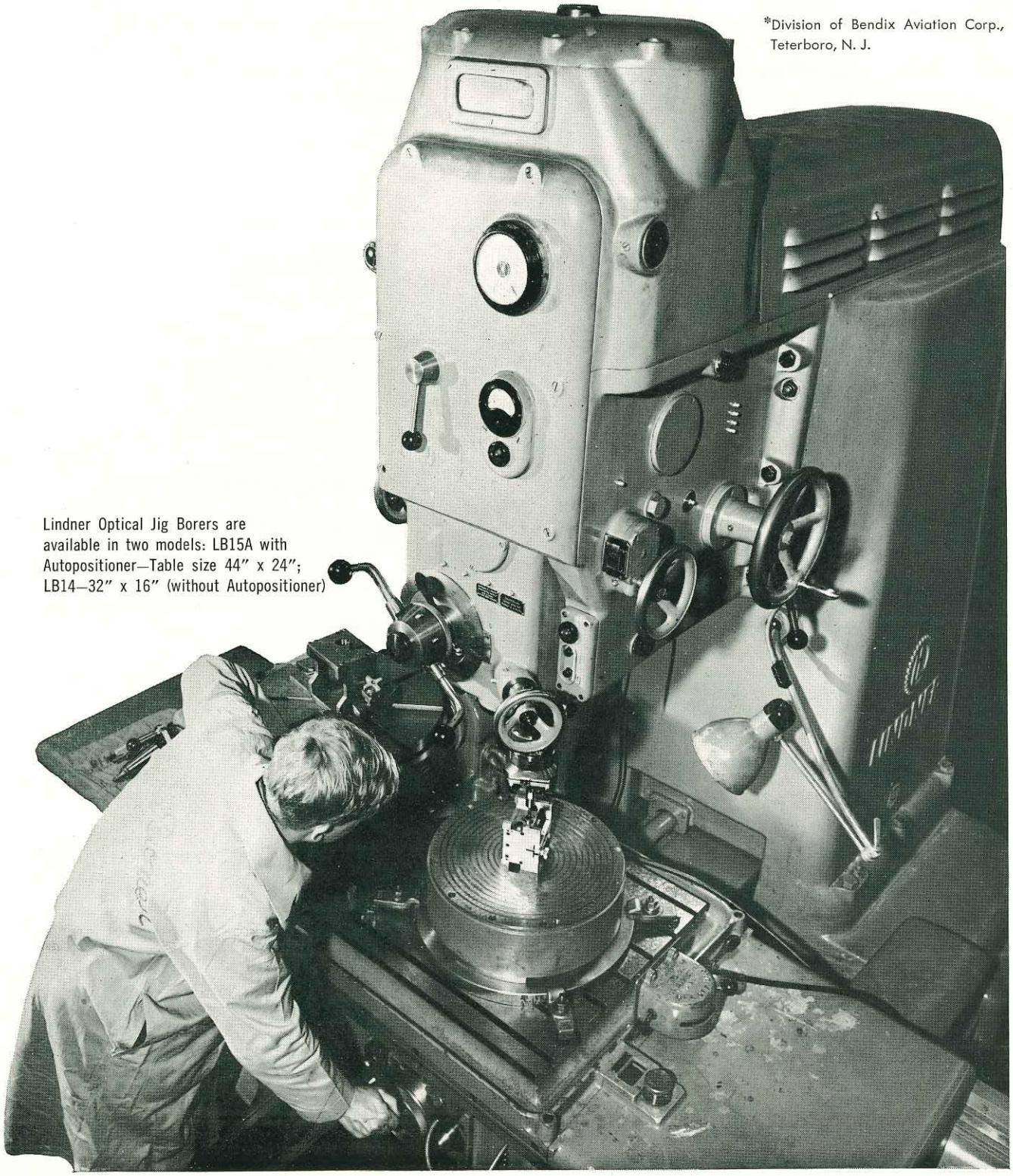
KO CO., INC. PRECISION MACHINERY

KURT ORBAN COMPANY, INC.

42 Exchange Place, Jersey City 2, N. J. • In Canada: 2490 Eglinton Ave. W, Toronto

helps Eclipse-Pioneer* maintain toolroom tolerances in gyro parts production

*Division of Bendix Aviation Corp., Teterboro, N. J.



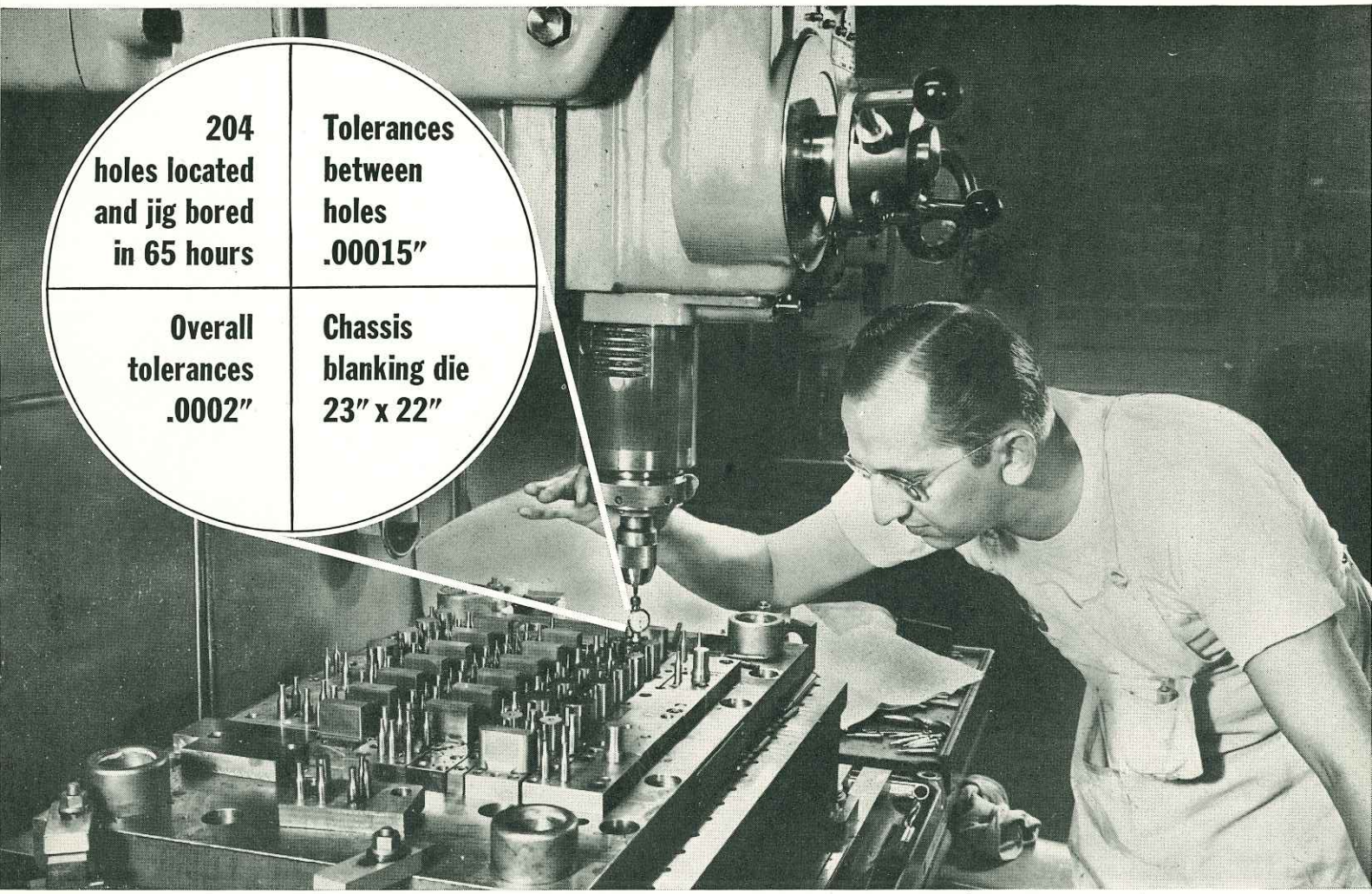
Lindner Optical Jig Borers are available in two models: LB15A with Autopositioner—Table size 44" x 24"; LB14—32" x 16" (without Autopositioner)

Working Range, Dimensions, Weights, Power required

	Model LB 14		Model LB 15 A	
	inch.	mm	inch.	mm
Range:				
Longitudinal movement of table	24	600	40	1000
Transverse movement of table	16	400	24	600
Minimum distance between table surface and boring spindle	3 1/8	80	10	250
Maximum distance between table surface and boring spindle	21 1/4	540	29 1/2	750
On special demand increased to	25 1/4	640	33 1/2 — 37 1/2 — 43 1/2	850 — 950 — 1100
Maximum automatic travel of boring spindle	6	150	10	250
Vertical adjustment of spindle head	12 1/2	310	10	250
Overall depth adjustment of boring spindle	18 1/2	460	20	500
Distance from center boring spindle to face of column	20	500	28	700
Maximum diameter to be drilled in solid steel	1	25	1 9/16	40
Maximum boring diameter	8	200	10	250
Maximum diameter of milling cutter	3 1/2	90	4 3/4	120
Morse taper of adapter sleeves	MT 2, 3 and 4		MT 2, 3 and 4	
Work table:				
Working surface of table	32 × 16	800 × 400	44 × 24	1100 × 600
Number of T-slots	6	6	7	7
Space between T-slots	2 9/16	65	3 11/32	85
Width of T-slots	15/32	12	35/64	14
Height above floor level	34	850	33	820
Special work table for vertical and horizontal clamping:				
Working surface of table (height 8"/200 mm)	—	—	16 × 12	400 × 300
Working surface of table (height 16"/400 mm) (only for machines with extended column height)	—	—	20 × 14	500 × 350
for horizontal clamping:				
Working surface of table (height 10"/250 mm)	—	—	40 × 24	1000 × 600
Working surface of table (height 16"/400 mm) (only for machines with extended column height)	—	—	32 × 24	800 × 600
Feeds and Speeds:				
Spindle speeds, infinitely variable	70 — 2000		25 — 1900	
Spindle feeds per revolution	.0012; .0028; .006	0.03; 0.07; 0.15	.0012 — .0064 (infinitely variable)	0.03 — 0.16
Power rapid traverse of table per minute	—	—	55	1400
Rate of table feed for milling per minute	—	—	1 — 3 (infinitely variable)	25 — 75
Measuring Controls:				
Lead of helical scales	.1	2	.1	2
Reading of index drums	.0005	0.01	.0005	0.01
Reading by verniers	.00005	0.001	.00005	0.001
Guaranteed accuracy for all settings of table	.00012	0.003	.00015	0.004
Dimensions, weights, power required:				
Floor space required for machine width	38 1/2	980	61	1600
depth	66 3/4	1690	93	2300
Height of machine with boring head elevated to highest position	92	2330	98 1/2	2500
In special design with column height extended by 4"—8"—14" (100 mm — 200 mm — 350 mm)	96	2430	102 1/2-106 1/2-112 1/2	2600—2700—2850
Floor space required including operating space	9' 6" × 10' 8"	2850 × 3200	14' 4" × 12' 8"	4300×3800
Net weight	7500 lbs	3400 kgs	13700 lbs	6200 kgs
Shipping weight	8800 lbs	4000 kgs	17000 lbs	7700 kgs
Case dimensions } machine with normal column height	7'3"×7'5"×7'11"	2200×2250×2400	10'3"×8'2"×9'4"	3130×2500×2850
Power required	1,5 kW		3,6 kW	
Codeword	HELENA		HELIOS	

	horizontal		tilting		horizontal		tilting	
Circular Indexing Tables:								
Leading dimensions:	inch.	mm	inch.	mm	inch.	mm	inch.	mm
Table diameter	17 5/16	440	11 13/16	300	23 5/8	600	17 5/16	440
Table height	6 5/16	160	8 21/32	220	7 1/2	190	12 19/32	320
Maximum length	29 1/8	740	18 5/16	465	37 3/4	960	21 1/4	540
Maximum width	24 3/4	630	26	660	29 1/2	750	33 3/4	855
Maximum height (tilted through 90°)	—	—	15 7/8	403	—	—	21 7/8	555
Height of tilting axis	—	—	4 1/4	108	—	—	7 9/32	185
Distance between table centre and tilting axis	—	—	2 13/64	56	—	—	1 31/32	50
Height of table centre when tilted through 90°	—	—	6 29/64	164	—	—	9 1/4	235
Distance between fastening bolts in longitudinal direction	27 9/16	700	17 5/16	440	36	915	19 11/16	500
Distance between fastening bolts in transverse direction	10 1/4	260	12 51/64	325	13 3/8	340	20 5/64	510
Width of T-slots	15/32	12	15/32	12	35/64	14	35/64	14
Adjustability:								
Graduation on table periphery	360°		360°		360°		360°	
Indexing drum reads to	1"		1"		1"		1"	
Graduation on tilting head	—		in degrees		—		in degrees	
Vernier reads to	—		1'		—		1'	

Why Lindner Optical Jig Borers have changed so many ideas about jig boring


204 holes located and jig bored in 65 hours
Tolerances between holes .00015"
Overall tolerances .0002"
Chassis blanking die 23" x 22"

MODEL LB15 (WITHOUT AUTOPOSITIONER) AT MIDDLESTADT

You're looking at the *third* Lindner Optical Jig Borer at work for Middlestadt Machine Co., Baltimore. And you'll see *seven* Lindners at General Electric; *five* at North American Aviation; *three* at Avco; others at General Mills, Lockheed, Vectron, Bendix—and a growing list of more precision-minded plants. Here's why:

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● ***Send for 25-minute movie film demonstration***

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